



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Ecological Services
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IN REPLY REFER TO:
ES/CO:FERC/Hydro Project
TAILS 06E24100-2013-CPA-0004

December 3, 2012

Kim D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Subject: Peabody Trout Creek Reservoir Hydroelectric Project (P-14446-000)

Dear Secretary Bose:

The Fish and Wildlife Service (Service) has reviewed the scoping document for the Trout Creek Hydroelectric Project and provides the following comments. The proposed project would include construction of a new reservoir on Trout Creek in the Yampa River basin, 15 miles southwest of Steamboat Springs, Routt County, Colorado.

To facilitate Endangered Species Act (ESA) compliance the applicant should obtain a list of threatened, endangered, and candidate species, that may occur in the project area or be affected by the proposed project. Official species lists can be obtained from the Information, Planning, and Conservation system on the following website: <http://ecos.fws.gov/ipac/>.

Endangered Colorado River Fishes

The Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*G. elegans*) are federally listed endangered fishes endemic to the Colorado Basin. Critical habitat designated for these species includes portions of the Yampa and Green Rivers and their 100-year floodplains (March 21, 1994; 59 FR 13374). Our greatest concern regarding construction of new reservoirs in the Yampa River basin is the establishment of nonnative warmwater fishes and aquatic organisms in reservoirs that escape downstream into habitat of the four Colorado River endangered fishes.

Concerns regarding nonnative aquatic organisms in the Yampa River basin are summarized below.

The tributaries of the upper Colorado River basin (UCRB) in western Colorado contain only 12 native fish species, including four cyprinid and two catostomid species that are

endemic to the Colorado River Basin. Four of these endemic fishes (Colorado pikeminnow, humpback chub, bonytail and razorback sucker) are federally listed as endangered. Only two of these native fishes, cutthroat trout (*Oncorhynchus clarkii* spp.) and the mountain whitefish (*Prosopium williamsoni*), are considered game fish. The Yampa River contains the 12 fish species native to western Colorado (Holden and Stalnaker 1975; Johnson et al. 2008a) and the middle (RK 75-224) and lower reaches below about 1,890 m ASL contain nine of these species (Anderson and Stewart 2007). The Yampa River in northwestern Colorado has been described as the “crown jewel” among tributaries of the UCRB for its formerly robust native fish population (Johnson et al. 2008a) and largely unregulated flow (Roehm 2004; Stewart et al. 2005). Draining mountainous and high desert terrain, it is the largest and most valuable tributary for endangered fish recovery of the Green River sub-basin (Tyus and Saunders 2001). The lower ~80 km of the river is designated as critical habitat for the four endangered fishes, with Colorado pikeminnow critical habitat extending upstream to RK 224. The Yampa River supports spawning habitat for three of the four endangered fishes: Colorado pikeminnow, humpback chub and razorback sucker (Tyus and Saunders 2001). Nonnative fishes are thought to pose the greatest threat to native fishes in this system (Johnson et al. 2008).

Twenty purposefully introduced nonnative coldwater and warmwater game fish species and at least an equal number of nonnative, nongame fish species are also present in the UCRB, inhabiting lakes, reservoirs or streams at all elevations. At least one species of crayfish, the virile crayfish, is widely established in the UCRB (Johnson 1986, Hubert 1988; Carothers 1994, Blinn and Poff 2005). Nonnative piscivores, originally introduced by agencies to create or supplement sport fisheries in reservoirs, are dispersing throughout the UCRB by emigration from reservoirs to rivers and inhibiting the recovery of native fishes (Martinez et al. 1994; Tyus and Saunders 2000). Stocking to develop recreational fisheries has been instrumental in declines of native species worldwide (Cambray 2003; Eby et al. 2006), and habitat alterations caused by impoundments provide a greater opportunity for multiple invader species compared with those found in natural lakes (Johnson et al. 2008). Therefore, native species downstream (or upstream) of reservoirs throughout the UCRB, including in the Yampa River, could be at considerable risk.

Intentional and unintentional stocking and immigration by nonnative fishes has resulted in the establishment of a variety of nonnative species in the Yampa River, including nongame cyprinids and several piscivorous game fish which provide recreational fisheries (Johnson et al. 2008a). Nonnative piscivores appear to be the most negatively correlated with native species and are most likely to alter native fish assemblages and raise extinction risk (He and Kitchell 1990; Moyle and Light 1996; Findlay et al. 2000; Mitchell and Knouft 2009). Predation on early life stages or juveniles of native fishes by nonnative predatory species, including crayfish and small-bodied fish, or on all life stages by larger piscivorous fishes, can reduce population numbers by compromising recruitment of young fish or by reducing the number of reproductive adults (Mueller et al. 2006, Johnson et al. 2008).

Northern pike (*Esox lucius*) and smallmouth bass (*Micropterus dolomieu*) were introduced into the Yampa River basin in the late 1970's by intentional stocking into Elkhead Reservoir (Tyus and Beard 1990; Johnson et al 2008a; Hawkins et al. 2009). These species escaped from the reservoir and northern pike became abundant in the upper and middle Yampa River below Stagecoach Reservoir since the mid-1980s (Nesler 1995; Hawkins et al. 2005). Lake Catamount is known to contribute northern pike downstream into the Yampa River, including in critical habitat (Orabutt 2006; Finney and Haines 2008; Martin and Wright 2010). Intensive removal of northern pike from Lake Catamount using trap nets, electrofishing, and angling have reduced the numbers of northern pike, but pike can readily re-inoculate the reservoir from Stagecoach Reservoir upstream (Rogers et al. 2005) where pike had been introduced illegally. The highly suitable habitat for northern pike in Lake Catamount (extensive littoral and vegetated areas; Fitzpatrick and Winkelman 2009) represents a "pike-replicator" scenario in which the species would be expected to rapidly repopulate without a dedicated level of ongoing removal to sustain suppression of the population or eradicate them from original source upstream in Stagecoach Reservoir.

Smallmouth bass were absent (Baily and Alberti 1952; Holden and Stalnaker 1975; Carlson et al 1979) or rare (Miller et al. 1982; Wick et al 1985; McAda et al. 1994) in the Yampa River before they were flushed in large numbers from Elkhead Reservoir during its draining in 1992 (Nesler 1995; Martinez 2003). Prior to this event, smallmouth bass were perceived to pose little threat to native fishes due to their rarity (Hawkins and Nesler 1991), and the low habitat suitability for them in the Yampa River due to flow and thermal conditions (Nesler 1995; Anderson and Stewart 2007). The abundance and distribution of smallmouth bass gradually increased in the middle Yampa River in the mid-1990s (Martinez 2006; Hawkins et al. 2009) and they were first detected in the lower Yampa River within Dinosaur National Monument in 2002 (Fuller 2009). However, smallmouth bass abundance increased abruptly in 2001 (Anderson 2002) and increased further in 2005 and 2006 (Hawkins et al. 2009), likely due to benefits accrued as a result of the drought (Anderson and Stewart 2007). Smallmouth bass have become the dominant predator in the middle Yampa River and their increase in abundance coincided with a severe decline in the numbers of native fish (Anderson and Stewart 2007; Bestgen et al. 2007b; Hawkins et al. 2009), and an abrupt increase in the abundance of virile crayfish (*Orconectes virilis*) (Anderson and Stewart 2007; Martinez 2006).

Crayfish were established in Crosho Lake near the Yampa River headwaters prior to or during the early 1950s, with abundant crayfish being reported in the lake in 1954 (Klein 1955). The virile crayfish population in Crosho Lake may be the oldest known crayfish population in northwestern Colorado (Carothers 1994). Other lakes in the upper Yampa basin were known to contain established virile crayfish populations or received transplants of virile crayfish by the late 1970s (Carothers 1994). Virile crayfish likely appeared in the middle Yampa River by the late 1980s, existing at low densities until the drought beginning in 2000. Fishery workers began to report observations of higher crayfish densities in 2001 (Martinez 2006) with an apparent explosion in their abundance occurring by 2003 (Anderson and Stewart 2007). Papershell crayfish *O. immunis*, signal crayfish *Pacifastacus leniusculus* and unidentified specimens of *Orconectes* were

reported in Fish Creek, a tributary in the upper Yampa River drainage, in 1980 and 1981 (Britton 1983). Water nymph crayfish *O. nais*, papershell crayfish, ringed crayfish *O. neglectus* now also occur in the upper Yampa River basin (Sovell and Guralnick 2004; Sovell et al. 2005). The rusty crayfish *O. rusticus* was believed to be established in only one site west of the Continental Divide in Washington (Olden et al. 2009), however, rusty crayfish now occur in the upper Yampa River within and below Catamount Reservoir (Brown 2011), and in Stagecoach Reservoir (Martinez 2012). Four of the crayfish species documented in the Yampa River, papershell, ringed, rusty and virile crayfishes are considered to be highly invasive (Larson and Olden 2010, 2011; Gherardi et al. 2011).

Escapement by nonnative aquatic species from reservoirs into riverine habitat can result in invasive impacts to the native aquatic community through predation and competition. Northern pike and smallmouth bass each pose a serious threat to native fishes in the Yampa River (Johnson et al. 2008). Northern pike are highly piscivorous and their large body size allows them to feed on larger, older native fishes, but smallmouth bass have the greatest capacity to hamper native fish recovery by virtue of their high abundance (Johnson et al. 2008). The trophic relationship between smallmouth bass and virile crayfish serves to intensify predation by smallmouth bass on small-bodied native fishes (hyperpredation; Martinez 2012). Further, the availability of abundant crayfish as prey further entrenches invasive predatory fishes in the ecosystem of the middle and lower Yampa River rendering efforts to reduce their abundance more difficult and costly (Martinez 2012). The synergistic effects of northern pike and smallmouth bass may be particularly devastating, because prey fish that manage to outgrow the gape of smallmouth bass will remain vulnerable to northern pike for years or a lifetime, depending on the species (Johnson et al. 2008). Some of the native fishes in the Yampa River have life spans exceeding 40 years and reproduce intermittently (Minckley and Deacon 1991). Populations with this life history type become vulnerable to collapse as mortality of older life stages increases due to predation by invasive species (Winemiller and Rose 1992; Musick 1999).

Conservation and recovery of federally listed fish species are emphasized in the Yampa River basin, particularly in the lower basin (CDOW 2010). Williams et al. (2011) stressed the importance of native fish conservation areas (NFCA) to reverse the trend of declining native fishes, to facilitate recovery of threatened and endangered aquatic species, and to protect native aquatic communities while allowing compatible uses. The middle and lower reaches of the Yampa River have been recommended for designation as a native fish conservation area (Karp and Tyus 1990; Martinez 2006, 2007; Valdez et al. 2008; Johnson et al. 2008). Although not formally designated as an NFCA, approximately 360 km of riverine habitat on the Yampa River below the town of Hayden and the Green and Lower Little Snake Rivers, within Colorado, serve an important role in sustaining populations of these species and are managed explicitly and primarily for conservation of the native fish community (CDOW 2010).

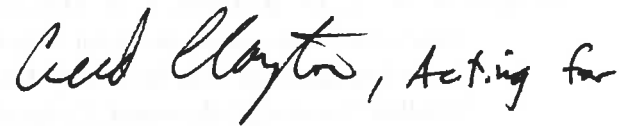
The Procedures for Stocking Nonnative Fish Species in the Upper Colorado River Basin (Procedures) were established to ensure that all future stocking of nonnative fish in Colorado,

Utah and Wyoming is consistent with the recovery of endangered fishes with in critical habitat of the UCRB (USFWS 2009). Any new reservoir in the Yampa River basin must comply with the procedures. In additional to intentional stocking, illegal stocking of nonnative aquatic species is a major concern that should be addressed by the applicant.

On January 10, 2005, the Fish and Wildlife Service (Service) issued the final Programmatic Biological Opinion (PBO) on the *Management Plan for Endangered Fishes in the Yampa River Basin* (this document is available for viewing at the following internet address: <http://www.coloradriverrecovery.org/documents-publications/section-7-consultation/yampa-river-pbo.html>). The applicant should review the PBO and determine if the water depletions associated with the proposed new reservoir meet the criteria to fit under the umbrella of the PBO.

If the Service can be of further assistance, please contact Patty Gelatt at the letterhead address, patty_gelatt@fws.gov, or (970) 243-2778, extension 26.

Sincerely,



Patricia S. Gelatt
Western Colorado Supervisor

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